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ZANZIBAR PROTECTORATE.

ANNUAL REPORT

ON THE

AGRICULTURAL DEPARTMENT

FOR THE YEAR

1922.

ZANZIBAR:

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1923.

ZANZIBAR PROTECTORATE.

REPORT ON THE AGRICULTURAL DEPARTMENT FOR THE YEAR 1922.

As I was on leave from February until November, the Assistant Director who acted has written the Report on the Agricultural Department for the year 1922.

I have, therefore, only to make observations on such matters as have come within my notice while in the Protectorate.

1. Though it was deemed desirable to obtain mainland labour for the Pemba clove harvest, the numbers who came over were insufficient to have any marked effect on the crop.

In a year of a large crop, the position is often eased by the different period of ripening in the two islands : and it was so during the past season.

The bulk of the cloves in Zanzibar island were not ready until December, and some 14,000 to 16,000 Zanzibar pickers crossed to the other island between October and December; returning later to take part in the Zanzibar harvest.

Branch-breaking in Pemba was universal; and considerable difficulties in both islands were experienced in obtaining evidence and convictions.

2. There appears to be a fairly well-defined response to the Government's efforts to get Arabs to plant.

The chief difficulty has been to train up men who can manage large nurseries for the production of several thousand clove seedlings, and it will take a year or two to get these staffs into thorough working order.

3. The main report of the Mycologist will be sent in at the expiration of that Officer's term.

An abridged report accompanies this. It is sufficient to note here that steps must be taken at once to deal with such root and leaf disease as the Mycologist's investigations have proved to exist.

Diseased areas on the Government plantations have already been taken in hand.

4. The Agricultural Returns will, in 1923, be extended to coconuts. Each year will increase the value of these Returns, which will form the basis of all regeneration work.

5. The methods of assistance to Arabs and natives by loans have proved, as in other years, the means of keeping many out of the hands of usurers.

6. The quality of the cloves produced in the past season is below the average.

December and much of January, usually dry months, were marked by torrential rains, and drying was carried out under great difficulties.

On the Government drying floors, where in normal weather drying is completed in four days, cloves were drying for two or three weeks, and many thousands of drying mats had to be used.

The accumulation of undried cloves increased greatly the difficulties always attendant on a large harvest.

On Arab plantations, of course, these difficulties were measureably greater.

F. C. McCLELLAN,
Director of Agriculture.

Zanzibar, 23rd February, 1923.

Section I.—General.

For a considerable part of the year the Department was understaffed, and at one time two Assistant District Commissioners were seconded for special work in connection with the collection of returns and the payment of the rebate to clove growers.

The Director left the Protectorate on leave on February 9th and returned on November 16th. Captain Welstead, who completed his first tour of twenty months' service in April, decided to retire at the end of this period. At the same time Mr. C. A. O'Connor proceeded to Madagascar on a special mission of enquiry in connection with recent developments in agriculture in that island. He was absent from the Protectorate for four months.

Mr. H. Waterland, the new Inspector of Plantations, took up his duties in June. During Mr. O'Connor's absence there was no Inspector of Plantations in Pemba, and Mr. J. S. Last acted as officer in charge of the Department in that Island. On his return, Mr. O'Connor resumed charge and Mr. Waterland took over the Weti District.

Section II.—Clove Harvest.

Early in the year there were indications of a very heavy harvest and this is now being realized.

The early months of the year were exceptionally dry and the "masika," or period of heavy rains, was about a month late and did not begin until the second week in May. As a result of this prolonged drought a large number of clove trees in both islands died. But in the majority of cases these were in rather unhealthy situations and not in a very flourishing state to begin with.

The ripening or development of the clove crop in its early stages was also delayed through the drought and consequently the picking did not begin until October. It is of interest to note, in Pemba particularly, that when the rains did start the weather continued unsettled until the end of the year, and at Weti there has been the heaviest annual rainfall on record. The heavy rains interfered seriously with the clove harvest and caused great loss to many growers who had not the accommodation for dealing with large quantities of wet green cloves. Of course stems under such conditions are always lost. Although too early at present to give figures, everything points to the present being a record harvest.

The rate of payment for picking, which started at 5 pice per pishi, went up during the course of the harvest to 10 pice; and in a few exceptional cases even higher wages were paid.

During the busiest part of the harvest Government steamers ran special trips to convey pickers to Pemba. A number of pickers were also conveyed from Dar-es-Salaam in the same way.

In former years the Department has been authorised to make loans, free of interest, to plantation owners in Pemba up to a total of Rs. 40,000. This year for the first time the privilege was extended to Zanzibar and the amount was increased to two lakhs of rupees. Many owners in both Islands availed themselves of this financial assistance to enable them to pick their crops.

Section III.—Legislation.

Early in the year the amended Agricultural Produce Decree, the amended Plantations Preservation Decree, and a new Decree calling upon owners of plantations to furnish the Government with the numbers and ages of clove trees growing thereon were promulgated.

The chief new feature of the Agricultural Produce Decree is the clause making it compulsory for dealers in cloves and copra to have annual licences from the Department.

Under the new Plantations Preservation Decree the wilful breaking of branches or other damage to trees is an offence.

A clause providing for the compulsory annual weeding of plantations comes into force on January 1st, 1923. This latter will very considerably increase the work of the Department, particularly in Pemba, as it will certainly result in the Government having to take over some of the worst plantations for the purpose of carrying out the terms of the Decree.

The Agricultural Returns Decree provided one of the most important, as well as one of the heaviest, pieces of work carried out by the Department during the year. A large amount of work was involved in the collection and tabulation of returns and the subsequent payment of rebates to owners of trees. The services of Assistant Distract Commissioners were lent to the Department specially for this work, and were in charge of the returns and payments in both islands. Table 14 shows the statistical results. The returns show about three and a quarter million trees, and the Government decided to make payment to owners at the rate of one rupee for every ten trees which they owned. This is a fair rate and enables owners to pay for one weeding of their trees each year. The number of trees in the returns is considered slightly below what actually exists as, owing to the novelty of the undertaking, some owners did not realise what was required of them and others, who did not believe that any financial benefit would result, did not trouble to send in returns.

Section IV.—Regeneration of Clove Areas.

Last year the Government established large nurseries in order to supply young clove trees free to plantation owners. In this way

over 30,000 young trees were supplied and the demands were considerably in excess of the supply. Large nurseries have been established this year at Machui, Selem and Dunga in Zanzibar, and at Fufuni, Tundaua and Makondeni in Pemba and it is hoped to have about 100,000 young trees ready for planting out next spring.

Owing to the lateness of the rains, the early part of the planting season was very dry and many planters who got to work on what they considered the first signs of " masika " suffered loss owing to deaths through drought. Those trees planted later have done exceptionally well owing to the almost continuous showers which have followed the " masika."

The publication of the Government scheme of bonuses for the planting of young trees has certainly so far had the desired effect. This scheme, although fairly generous to the planters, is not unduly so when it is understood that for the first 10 years he cannot expect return from his trees which will be anything like sufficient to pay for the weeding of the area upon which they are planted, to say nothing of interest on his capital.

Section V.—Government Plantations.

There has been a steady flow of labour from the mainland, chiefly Wanyamwezi, and it has been found possible to reduce the rate of wages on our plantations from Rs. 21 to Rs. 18 per month per man, and at the same time to continue the daily task of 10 pengeles.

The Wanyamwezi for the first time have taken an active part in clove picking; about 140 of those employed regularly as weeders on Government plantations in Zanzibar volunteered for this work on Pemba plantations and were of very considerable assistance to the Department.

A complete census of both clove and coconut trees on the Government plantations was taken during the year, and the Department's progressive development is well illustrated by the large proportion of young unbearing trees of both cloves and coconuts.

The Government propose to dispose of some of their small outlying plantations by cutting them up into small holdings, and Kwamacho and Michenzani plantations, in the district of Mkoani in Pemba have already been surveyed and plans made with this end in view.

All the plantations have good clove crops this season and everything points to a record harvest.

At the beginning of the year the price of copra was good and the result was that many of those tendering for the coconuts of the Government plantations were too optimistic, and when, towards the middle of the year, prices fell considerably many licencees defaulted in payment of their rents and the Government was left with the crop.

Very considerable damage has been caused by fire during the year. These fires are usually started by the natives cultivating their food crops. During the process of clearing such plots they set fire to the weeds and neglect to look after such fires. In most cases the person causing the fire is difficult to trace and often when found is some old freed slave, feeble alike in body and mind, and to whom it is impossible to apply any adequate form of punishment.

R. ARMSTRONG,
Acting Director of Agriculture.

Zanzibar, 31st December, 1922.

Abstract of Mycologist's Annual Report 1923.

In accordance with instructions, I have devoted most of my time to an investigation of the clove, and this report deals with that part of my work.

There are now only about $3\frac{1}{2}$ million clove trees in the Protectorate, many having died in recent years, especially in Pemba. The deaths have in the past been attributed to various causes such as drought, bad cultivation and unsuitable soil.

An examination was made of the shambas and at the same time a study was made of the tissues of healthy and unhealthy trees.

This investigation has resulted in the demonstration of two diseases which are responsible for most of the deaths, the remainder being due to the attacks of animals or to unsuitable conditions.

The two diseases are due to fungi; in one case the root is destroyed and in the other the leaf. The first of these is the most important and is a root-rot disease causing the symptoms known locally as " sudden death "; the second is more widely spread, but much less virulent, but it causes the twigs to become bare and is usually spoken of as " die-back ".

Root-rot Disease.

The fungus which causes this disease is found in the soil, where it lives saprophytically on decaying twigs and roots and under certain conditions it is able to attack living clove roots. Having once obtained an entrance into the small fibrous clove roots, it grows from cell to cell gradually destroying the smaller roots and spreading into the thick roots and base of the trunk. When the fibrous roots, which absorb water from the ground, have been destroyed, the whole tree wilts and dies; if only a few roots are destroyed, one branch only may be killed. The mycelium of the fungus forms a layer under the bark and as the wood dries up, fruits and spores are produced near the surface of the soil where air is fairly abundant.

The disease is very infectious and is spread chiefly by the contact of diseased and healthy roots, the fungus spreading from one to another; it is also propagated by the spores which are carried by ants and other animals.

Treatment.

The infected tree should be cut down and removed directly it wilts and the main roots and stump should be thoroughly charred to prevent spore formation. The stump and its immediate surrounding neighbours should be isolated by a trench $2\frac{1}{2}$ feet deep and the ground should receive a dressing of 1 lb of lime to the square yard. Trees growing in badly cultivated soil are very liable to the disease.

"Die back" disease of the twigs is very common on trees growing in exposed positions. It is due to a wind-borne fungus which enters the leaves through the stomates, causing them to fall. The fungus is only able to enter those leaves whose surface is roughened by the presence of the *alga cephateuros mycordea* which in this country is an epiphyte on the clove. Both fungus and alga can be destroyed by spraying with Bordeaux mixture; careful pruning and good cultivation also checks the disease.

E. J. WELSFORD,
Mycologist.

Table I.

Expenditure and Revenue, 1922 :—

EXPENDITURE.				REVENUE.	
Administration.		Plantations.			
	Rs.		Rs.		Rs.
Staff	60.603	Staff	69.096	Sale of cloves*	70,731
Travelling and Incidental	8.011	Travelling and Incidentals	5.143	Sale of coconuts†	1,17,499
General Clove Harvest	9.222	Clove Harvest	81,531	Ground rents	4,512
Sundry other charges	15.150	Cultivation	1,54,429	Miscellaneous	34.699
Clove Regeneration	17.472	Sundry	16.699		
Agricultural Returns Rebate	1.55.766				
Other special Expenditure	10.708				
Total Rs.	2.76.932	Total Rs.	3,26.878	Total Rs.	2.27,441

* 7,500 fraslas in hand on 31st December valued at Rs. 1,50.000.

† Sums outstanding Rs. 24.790.

Table II.

Course of harvest and deliveries compared with former years :-

Months.	1916/17			1917/18		
	Zanzibar *fras.	Pemba fras.	Total fras.	Zanzibar fras.	Pemba fras.	Total fras.
July ...	99	1,748	1,847	5,170	13,465	18,635
August ...	3,453	3,539	6,992	2,054	2,232	4,286
September ...	15,121	10,130	25,251	3,108	14,973	18,081
October ...	20,938	29,335	50,273	6,778	54,800	61,578
November ...	37,586	57,477	95,063	16,897	50,168	67,065
December ...	45,693	55,391	101,084	24,917	27,201	52,118
January ...	38,845	68,290	107,135	5,858	28,295	34,153
February ...	11,634	29,859	41,493	1,538	25,063	26,601
March ...	18,177	12,577	30,754	1,161	15,333	16,494
April ...	9,365	8,196	17,561	466	6,480	6,946
May ...	4,537	15,230	19,767	285	5,519	5,804
June ...	2,959	3,932	6,891	54	3,101	3,155
Total ...	208,716	302,919	511,635	63,958	234,239	298,197

Months.	1918/19 Zanzibar *fras.	Pemba fras.	Total fras.	1919/20 Zanzibar fras.	Pemba fras.	Total fras.
July	99	1,748	1,847	5,170	13,405	18,635
August ...	12,125	4,225	16,350	8,964	19,763	28,727
September ...	21,770	30,401	52,171	4,177	26,221	30,398
October ...	33,727	85,030	118,757	8,833	30,565	39,398
November ...	39,749	97,879	137,628	7,483	21,042	28,525
December ...	26,234	75,650	100,884	12,917	9,834	22,751
January ...	39,628	75,663	115,291	24,340	18,319	42,659
February ...	33,230	76,330	109,560	11,050	9,468	20,518
March ...	20,714	40,540	61,254	4,353	8,208	12,561
April ...	11,007	34,596	45,603	3,874	6,895	10,769
May ...	16,249	26,878	43,127	2,042	3,868	5,910
June ...	5,741	16,289	22,030	644	1,055	1,699
Total ...	259,273	565,229	824,502	93,847	168,703	262,550

Months.	1920/21 Zanzibar *fras.	Pemba fras.	Total fras.	1921/22 Zanzibar fras.	Pemba fras.	Total fras.
July ...	982	9,592	10,574	15,023	10,554	25,577
August ...	4,598	1,573	6,717	7,557	20,365	27,922
September ...	8,898	4,504	13,402	4,721	30,653	35,374
October ...	6,461	9,734	16,195	7,465	35,950	43,415
November ...	17,995	26,144	44,139	8,056	21,392	89,448
December ...	16,972	25,112	42,084	6,271	26,447	32,718
January ...	47,061	70,184	117,245	9,948	12,337	22,285
February ...	62,006	83,037	145,043	3,288	11,252	14,540
March ...	29,382	26,590	55,972	1,093	6,417	7,510
April ...	22,493	22,851	45,344	1,021	9,792	10,813
May ...	8,098	19,510	27,608	837	7,107	7,944
June ...	6,885	17,615	24,500	539	8,716	9,255
Total ...	231,831	316,446	548,277	65,819	200,982	266,801

Months.	1922/23 Zanzibar *fras.	Pemba fras.	Total fras.
July ...	911	59	970
August ...	9,943	1,520	11,463
September ...	17,631	23,669	41,300
October ...	30,282	92,075	122,357
November ...	28,336	118,234	146,570
December ...	29,579	141,675	171,254
January ...	61,999	104,528	166,527
Total ...	178,681	481,760	660,441

To end of January, 1923.

In all the above tables the season is taken as commencing from 1st July and ending on the following 30th of June.

*One frasla equals 35 lbs.

It is estimated that there still remain to be delivered from two and a half to three lakhs of fraslas, making the total crop nearly ten lakhs of fraslas; the previous highest record for a season being 8,24,000 fraslas in 1918/1919.

Table III.

Exports from Pemba Shipping Places, 1922 :—

Port. Name.	District.	Cloves		Stems.		Copra.		Chikichi.		Coconuts.	
		Frasilas.	District total.	Frasilas.	District total.	Frasilas.	District total.	Frasilas.	District total.	No.	District total.
Weti	Weti	1,18,023	...	10,436	...	41,869	...	345	...	2,974	...
Mtambwe	..	17,713	...	826	...	3,891	...	...	...	...	...
Junguni	..	3,469	...	273	...	6,457	...	...	...	...	...
Mtangatwani	..	7,559	...	885	...	11,459	...	...	...	...	...
Msuka	..	6,709	1,53,473	1,124	13,544	19,439	83,115	...	345	...	2,974
Chake Chake	Chake Chake	1,07,100	1,07,100	12,046	12,046	25,101	25,101	...	...	...	...
Kiswani	Mkoani	37,570	...	2,075	...	12,510	...	...	...	...	...
Jamagombe	..	76,504	...	4,643	...	6,597	...	...	...	...	...
Mkoani	..	16,224	...	1,264	...	3,137	...	...	...	...	...
Fufuni	..	51,110	...	4,976	...	11,035	...	...	...	...	...
Kengeja	..	45,461	2,26,869	3,682	16,640	12,125	45,404	...	...	...	...
	Total		4,87,442		42,230		1,53,620		345		2,974

Table IV.

Annual Clove Exports, Pemba.

Year.	Weti District.						Chake-Chaki District.			Mkoani District.				
	Weti.	Mtambwe.	Junguni.	Kipangani. (Matanga Twana)	Msuka.	Weti.	Chake.	Kiruwani.	Chake.	Jambangome.	Mkoani.	Fufuni.	Kengeja.	Mkoani.
	Fs.	Fs.	Fs.	Fs.	Fs.	Fs.	Fs.	Fs.	Fs.	Fs.	Fs.	Fs.	Fs.	Fs.
1913	91,596	22,159	5,121	3,231	1,311	1,23,418	1,45,521	56,050	2,01,571	92,515	40,059	40,215	38,992	2,11,781
1914	88,433	13,786	5,721	8,666	6,594	1,23,200	85,779	23,550	1,09,329	45,043	13,988	10,947	21,826	91,804
1915	1,64,655	25,072	12,992	21,738	11,126	2,35,583	1,46,913	46,330	1,93,243	79,069	26,732	40,228	46,693	1,92,722
1916	1,17,387	26,709	12,168	7,305	5,950	1,69,519	84,807	28,707	1,13,514	62,631	14,788	22,144	42,279	1,42,142
1917	20,951	12,135	5,248	7,828	4,449	50,611	23,096	8,011	31,107	23,114	4,654	12,010	10,850	50,628
1918	76,309	17,786	15,555	10,503	5,429	1,25,582	1,25,634	16,032	1,41,666	74,253	28,153	10,583	37,815	1,50,804
1919	1,40,562	18,810	10,269	7,427	5,763	1,82,831	77,261	28,463	1,05,724	51,370	16,964	13,876	26,807	1,09,017
1920	31,674	3,304	1,010	1,001	4,874	41,863	30,311	5,499	35,810	16,433	2,096	6,923	11,823	37,275
1921	1,04,339	12,302	10,650	7,714	9,663	1,44,668	93,601	24,740	1,11,341	12,484	55,703	26,131	44,756	1,39,074
1922	1,18,000	17,700	3,400	7,500	6,700	1,53,300	1,07,000	37,500	1,44,500	76,500	16,200	51,100	45,400	1,89,200
Total ..	9,53,906	1,69,763	82,134	82,913	61,859	13,50,575	9,19,923	2,70,882	11,90,805	5,33,712	2,19,337	2,34,157	3,27,241	13,14,447
Per cent.	24·33	4·4	2·1	2·13	1·58	35·04 45	23·86	7·11	30·97 26	13·84	5·68	6·08	8·49	34·09 29

Note.—This table shows the various places from which cloves, etc., are shipped in Pemba and is connected with the question of road provision; and facilities for getting produce to Zanzibar in better condition than is possible under the present system of carriage by canoes and dhows.

Table V.

Comparative prices of cloves and stems in London and in Zanzibar (pence per lb.), 1922 :—

Month.	London.					Zanzibar.		
	Penang.	Amboyna.	Madagascar.	Zanzibar.	Stems.	Zanzibar.	Pemba.	Stems.
January ...	26·00	21·00	16·00	18·00	4·00	13·54	13·53	3·57
February ...	26·00	21·00	16·00	17·00	4·00	12·63	12·54	3·28
March ...	26·00	21·00	16·00	14·25	4·00	11·54	10·80	3·06
April ...	26·00	21·00	16·50	13·50	4·00	11·60	11·37	2·60
May ...	26·00	21·00	16·00	13·50	4·00	12·60	11·94	3·00
June ..	26·00	21·00	16·00	13·50	4·00	11·94	10·37	2·97
July ...	26·00	21·00	16·00	13·50	4·00	11·00	9·60	2·86
August ...	26·00	21·00	16·00	14·50	4·00	10·94	9·97	2·68
September ...	27·00	21·00	16·00	15·50	4·00	9·40	8·71	1·74
October ...	27·00	21·00	16·00	16·00	4·00	7·66	6·86	1·80
November ...	...	...	...	...	...	6·37	5·63	1·34
December ..	...	...	...	...	...	6·26	6·09	1·37

Table VI.

Proportions between the seasonal yields of cloves and stems for whole Protectorate :—

Season.	Cloves Frs.	Stems Frs.	Percentage of stems to cloves.
1904/1905	635,568	124,242	19½
1905/1906	308,950	78,248	25
1906/1907	266,512	48,307	18
1907/1908	755,634	153,562	20
1908/1909	614,630	121,156	19½
1909/1910	409,925	84,547	25
1910/1911	192,407	38,320	20
1911/1912	798,663	161,187	20
1912/1913	135,391	28,389	21
1913/1914	733,680	145,932	18½
1914/1915	526,309	64,179	12
1915/1916	796,757	89,630	11¼
1916/1917	511,635	69,153	13½
1917/1918	298,197	42,951	14½
1918/1919	824,502	12,366	1½
1919/1920	262,551	107,405	41
1920/1921	548,277	64,210	11½
1921/1922	266,801	87,680	33

In a large crop year, or when the cloves have to be harvested in times of rain, the percentage of stems to cloves is less, as the energies of the owner have to be directed in getting in the more valuable portion of his crop.

In December and January of the present season, owing to abnormal rains, many owners had to throw the stems away.

Note.—There were large accumulations of unsold stems of previous harvests on all plantations, Government and private alike.

Table VII.

Table showing "mwaka" and "mvule" clove crops and "mwaka" and "mvule" rains :—

Year.	Total rainfall. Inches.	No. of rainy days.	Average daily rainfall.	Heaviest daily Rainfall.		Mwaka rains, 1st March to 31st May.			Mvule rains, 1st October to 31st December.			Seasonal clove crop.		
				Quantity.	Date.	No. of rainy days.	Rainfall.	Average daily rainfall.	No. of rainy days.	Rain all.	Average daily rain all.	Season.	Quantity in frasias.	Period of heaviest part of crop.
1911	59·14	92	0·16	3·30	9th May	45	40·83	0·44	28	11·01	0·12	1911/12	7,98,663	..
1912	65·69	112	0·18	4·88	26th December	38	23·88	0·26	44	24·33	0·26	1912/13	1,35,391	..
1913	53·09	102	0·15	2·97	20th April	51	28·76	0·42	28	8·73	0·09	1913/14	7,33,680	..
1914	42·94	89	0·12	5·54	28th April	31	25·09	0·27	27	9·08	0·10	1914/15	5,26,309	..
1915	51·62	102	0·14	4·37	27th November	43	25·94	0·28	21	12·62	0·14	1915/16	7,96,757	..
1916	63·49	92	0·17	10·80*	14th April	42	39·99	0·43	24	11·69	0·13	1916/17	5,11,635	..
1917	57·09	112	0·16	4·22	8th November	52	31·58	0·34	18	9·50	0·10	1917/18	2,98,197	..
1918	56·50	99	0·15	4·60	6th May	28	25·58	0·28	34	14·74	0·16	1918/19	8,24,502	..
1919	47·98	93	0·13	3·61	16th November	33	18·93	0·21	29	19·67	0·21	1919/20	2,62,551	..
1920	41·03	74	0·12	5·24	19th May	32	24·75	0·27	27	15·26	0·17	1920/21	5,48,274	Mvule
1921	49·71	79	0·14	3·94	21st November	38	26·35	0·29	22	16·59	0·18	1921/22	2,66,801	Mvule
1922	53.55	120	0·44	3.23	2nd November	40	18.94	0·47	42	26·24	0·62	1922/23	6,60,141‡	Mvule

* The gauges overflowed, and this figure is below the actual rainfall on this occasion.

‡ This figure represents the quantity for the period from 1st July to 31st January.

Table VIII.

Export of cloves to different continents from 1910 to 1922 in fraslas of 35 lbs. each :—

Continent	1910	1911	1912	1913	1914	1915	1916
Europe	137,168	224,124	173,356	251,133	163,074	264,857	239,608
America	31.329	100,311	73,615	56,443	99,998	128,409	62,429
Asia	194,521	2,487,491	186,852	193,501	218,793	329,295	272,340
Africa	3,658	5,712	1,947	7,858	3,004	3 881	5,132
Australia	..	..	..	..	..	..	..
Total	366,676	2.817,638	435,770	508,935	484,869	726,442	579,509

Continent	1917	1918	1919	1920	1921	1922	..
Europe	102,904	27,729	172,927	93,698	193,738	185,629	..
America	51,946	45.834	42,699	29,225	104,208	120.256	..
Asia	298,284	241,979	359,595	124,502	230,355	273,014	..
Africa	35,609	160,042	39,982	4,321	4,550	12,662	..
Australia	..	..	..	..	2,496	5,635	..
Total	488,743	475,584	615,203	251,746	535,347	597,196	..

*Figures for previous years are given in my 1910 Annual Report.

Table IX.

Average prices of cloves during 1922, month by month, in rupees compared with the five previous years :—

	1917.			1918.		
Month.	Zanzibar.	Pemba.	Stems.	Zanzibar.	Pemba	Stems
January	10.51	9.93	0.71	20.00	19.99	0.81
February	10.33	9.64	0.70	20.53	19.61	0.87
March	11.33	10.83	0.60	20.18	21.90	0.84
April	11.60	10.71	0.58	26.43	25.75	1.16
May	12.42	11.10	0.54	26.35	25.51	1.18
June	14.87	12,71	0.65	28.50	23.81	0.69
July	...	12.12	...	...	19.09	0.75
August	13.33	12.31	0.62	18.50	23.81	0.62
September	13.55	12.26	0.75	22.92	20.11	0.54
October	15.63	14.46	0.90	18.74	17.73	0.54
November	18.64	17.85	0.85	15.61	14.60	...
December	20.21	19.89	0.77	...	13.20	...
Yearly Average	13.85	12.81	0.69	21.77	20.43	0.80

	1919.			1920.		
Month.	Zanzibar.	Pemba.	Stems.	Zanzibar.	Pemba.	Stems.
January	13.75	12.03	...	29.79	28.14	3.38
February	10.84	10.26	...	30.50	29.03	3.94
March	10.69	10.49	0.87	29.00	28.25	2.84
April	...	10.64	0.56	30.19	28.96	2.88
May	14.71	13.06	0.68	...	29.39	2.70
June	17.81	16.62	...	...	28.62	2.25
July	...	20.91	0.75	22.00	22.03	2.10
August	24.08	22.40	1.71	...	19.50	2.31
September	23.00	21.79	1.84	...	21.09	2.37
October	26.93	24.55	2.51	24.87	20.97	2.19
November	32.72	30.42	3.70	14.87	14.25	1.69
December	33.15	31.45	3.75	14.50	12.06	1.62
Yearly Average	20.76	18.72	1.82	24.46	23.52	2.52

Month.	1921. Zanzibar.	Pemba.	Stems.	1922. Zanzibar.	Pemba.	Stems.
January	...	11.37	1.44	29.67	29.65	7.81
February	...	12.85	1.43	27.65	27.42	7.17
March	15.11	13.95	1.95	25.23	23.62	6.71
April	15.86	14.84	2.32	25.38	24.90	6.34
May	16.02	14.58	3.08	27.54	26.12	6.56
June	16.29	14.91	3.41	26.10	22.67	6.50
July	22.91	21.00	4.52	24.07	20.97	6.25
August	26.02	24.03	5.94	23.92	21.84	5.89
September	26.06	24.19	5.46	20.56	19.05	3.81
October	27.30	25.12	6.25	16.72	15.00	3.92
November	30.80	28.02	6.79	13.91	12.30	2.95
December	31.37	28.67	6.49	13.69	13.31	2.98
Yearly Average	22.77	19.46	4.17	22.87	21.40	5.57

Table X.

Highest and lowest prices of cloves and stems.

Season.	Highest and lowest.	Zanzibar cloves. Month	Price Rs.	Pemba cloves. Month	Price Rs.	Stems. Month	Price Rs.
1921-1922	Maximum	January	33·00	January	32·47	January	8·00
	Minimum	July	19·00	July	16·00	July	3·62
1922/31st Jan. 1223	Maximum	August	26·50	August	25·00	August	6·50
	Minimum	December	9·00	November	11·25	November	2·84

Table XI.

Export of copra and palm kernels (produced in the Protectorate) for the past 10 years, and average price of copra per frasla of 35 lbs.

Year.	lbs.	Average price per frasla of 35 lbs. Rs. cts.
1913	16,604,611	4 85
1914	18,983,047	3 87
1915	19,231,521	3 73
1916	12,258,341	4 72
1917	14,746,075	7 10
1918	7,126,578	3 71
1919	31,756,528	5 31
1920	18,850,826	6 59
1921	26,529,664	6 60
1922	16,445,744	5 33

Copra and palm kernels were formerly included as one in the Customs Returns, but are now kept separate.

The export of palm kernels is a negligible quantity, and the figure for 1922 is for copra only.

Table XII.

Monthly average prices of copra per frasla of 35 lbs. 1922.

Month.	Per frasla		Equal to £ per ton.		
	Rs.	cts.	£.	s.	d.
January	4	32	18	8	8
February	4	30	18	6	11
March	4	43	18	18	—
April	4	54	19	7	5
May	4	51	19	4	10
June	4	43	18	18	—
July	4	60	19	12	6
August	4	61	19	13	4
September	4	30	18	6	11
October	4	30	18	6	11
November	4	39	18	14	7
December	4	46	19	—	7
Yearly average	4	43	18	18	—

Table XIII.

Export of chillies and gum-copal for the past 10 years :—

	Chillies.		Gum copal.	
Year.	lbs.	Rs.	lbs.	Rs.
1913	76,557	15,720	164,139	125,849
1914	101,183	24,735	98,035	84,080
1915	78,730	36,407	130,378	49,210
1916	125,887	66,086	52,784	35,766
1917	172,074	46,293	43,265	28,605
1918	229,566	71,568	26,696	15,923
1919	89,614	31,224	103,404	68,615
1920	82,187	27,813	274,376	191,564
1921	48,832	32,318	236,096	232,633
1922	79,072	46,322	369,152	364,355

The above figures do not show production.

Most of the gum-copal is imported from the mainland for re-export.

Table XIV.

Summary of Agricultural Returns, 1922 :—*

Island.	Number of owners.		Number of Plantations.	Trees.		Rebate Paid.
				Bearing.	Young.	Rs.
Zanzibar	Swahilis ...	4,840	7,070	236,758	55,559	34,382
	Arabs ...	1,218	1,869	735,544		
	Indians ...	165	262	52,768		
	Official Trustees..	53	81	46,559		
	Miscellaneous ...	27	41	3,276		
	Total ...	6,303	9,323	1,074,905	55,559	34,382
Pemba...	Swahilis ...	8,717	15,117	896,439	122,001	1,21,384
	Arabs ...	2,973	6,819	888,259		
	Indians ...	158	1,038	99,722		
	Official Trustees..	164	164	34,448		
	Miscellaneous ...	5	18	7,180		
	Total ...	12,017	23,156	1,926,048	122,001	1,21,384
	Grand Total ...	18,320	32,479	3,000,953	177,560	1,55,766

* Not including the Government plantations, for which see Table XV.

Table XV.

Stock taking on Government plantations, 1922 :—

Island.	Cloves.		Coconuts.		Percentage of clove trees on the Government plantations to those on private plantations.
	Bearing.	Young.	Bearing.	Young.	
Zanzibar ...	109,525	22,436	153,522	130,295	
Pemba ...	21,889	1,543	16,289	6,397	
Total ...	131,414	23,979	169,811	136,692	4·88

Table XVI.

Meteorological observations, 1922 :—

Month.	Temperature.								Rainfall.								
	Zanzibar Town.				Pemba, Banani.				Zanzibar.						Pemba.		
	Means of.		Absolute.		Means of.		Absolute.										
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Town.	Selem.	Kidiche.	Koani.	Mkokotoni.	Chwaka.	Banani.	Weti.	Kigomache.
January ...	87·9	80·2	91·1	78·0	88·8	79·6	92·0	78·0	0·00	0·04	0 00	0·00	0·00	0·01	0·72	0·24	0·00
February ...	89·9	80·2	92·0	79·1	90·0	79·4	91·5	78·0	0·00	0·00	0·04	0·00	0·00	0·00	0·27	0·00	0·00
March ...	88·3	80·3	92·0	75·2	89·2	75·9	91·5	77·0	3·84	5·95	8·71	5·16	5·54	2·08	8·91	6 45	3·93
April ...	87·4	78·7	89·6	76·6	88·3	78·9	91·0	76·0	2·10	1 53	2 63	3·73	3·20	3·97	7·79	8 85	3·11
May ...	82·9	75·5	87·1	72·7	84·8	76·5	90·0	74·0	13·00	15·53	12·47	17·33	19·54	6·21	29·75	22·19	24·87
June ...	81·9	74·0	84·4	72·0	83·8	75·3	87·0	73·0	3·99	4·35	3·67	7·75	7·4	1·33	7·97	4·13	5·48
July ...	80·8	72·4	82·6	68·7	82·4	73·2	84 0	72·0	1·68	2 88	2·76	3·96	2·78	1·21	4·12	1·49	2·80
August ...	81·4	72·7	83·2	71·7	82·7	73·4	85·0	72·0	1·33	3·95	2·13	3 87	5·75	0·81	2·28	2·94	5·54
September ...	82·7	73·2	85·4	69·7	84·5	74·2	86·0	73·0	1·37	2·41	1·37	2·24	3 49	0·32	1·02	1·17	3·01
October ...	84·0	75·2	86·0	73·5	86·3	76·1	89·0	75·0	4·47	4·64	3 64	8·93	1·26	0·95	11·12	1·83	6·32
November ...	85·2	77·2	88·0	74·9	86·6	77·6	89·0	76·5	14·36	7·36	12 57	13·83	5 00	1·12	19·30	9·76	4·12
December ...	86·4	78·6	88.2	74·7	84·7	78·5	90·0	74·0	7·41	10·12	9 96	10·94	6 23	1·04	11·47	7·88	2·99
Total ...	84·7	76·5	92·0	68·7	86·0	76·5	92·0	72·0	53·55	58·76	59·95	77·74	60·20	19 05	104 72	66·93	62·17

Table XVII.

Average mean temperature, Zanzibar :—

Year.	Maximum.	Minimum.
1909	84.9	75.9
1910	84.4	76.4
1911	84.3	76.3
1912	85.2	76.6
1913	84.9	76.4
1914	86.2	77.5
1915	85.7	77.1
1916	85.1	76.4
1917	84.5	76.2
1918	84.3	75.9
1919	85.5	77.0
1920	84.1	76.6
1921	85 0	76.6
1922	84.7	76.5
Average for 14 years 1909 to 1922	84 9	76 5

Table XVIII.

Prices of foodstuffs, pre-war and post-war compared :—

Article.	How sold.	Pre-war.	1921.	1922.	Percentage comparison over pre-war.	Percentage comparison of 1921 and 1922.
Rice (Meli) ...	Per bag of 165 lbs. ...	13·00	26·00	20·00	+54	−23
Flour ...	,, ,, 196 lbs. ...	18·00	38·00	26·00	+44	−31
Wheat ...	,, ,, 180 lbs. ...	16·00	35·00	27·00	+69	−23
Beans ...	,, ,, 180 lbs. ...	16·00	14·00	15·00	−6	+7
Maize ...	,, ,, 180 lbs. ...	6·00	9·00	7·50	+25	−17
Millet ...	,, ,, 180 lbs. ...	9·00	21·00	9·00	...	−57
Tea (Ceylon) ...	Per case of 60 1-lb. tins ...	63·00	104·00	100·00	+58	−4
Sweet Potatoes ...	Per lb. ...	9 pice	8 pice	6 pice	−33	−25
Onions ...	Per frasila of 35 lbs. ...	2·25	7·00	4·00	+77	−43
Milk ...	Per four bottles of $\frac{1}{6}$-gallon each ...	1·00	1·00	1·15	+15	+15
Cassava ...	Per basket of 100 lbs. ...	160 pice	250 pice	180 pice	+12	−28
Fish ...	Per lb. ...	24 pice	32 pice	24 pice	...	−25
Salt ...	Per jizla of 600 lbs. ...	9·00	10·00	11·00	×22	+10
Firewood ...	Per ton ...	18·00	22·00	32 00	+77	+45
Meat ...	Per lb. ...	0·25	00·62	00·50	+100	−19

Table XIX.

Comparison of actual revenue and expenditure on the Government plantations year by year :—

Year.	Revenue.				Expenditure.				
	Cloves. Rs.	Coconuts. Rs.	Sundry. Rs	Total. Rs.	Personal emoluments. Rs.	Cultivation. Rs.	Clove harvest. Rs	Sundry. Rs.	Total. Rs.
1910	35,636	33,009	36,289	1,04,934	10,932	41,839	6,081	8,736	67,588
1911	1,01,313	41,576	33,604	1,76,493	9,362	54,780	28,366	10,127	1,02,635
1912	1,63,042	6 ,443	30,988	2,54,473	14,684	62,238	29,160	15,809	1,21,891
1913	1,85,185	72,771	29,053	2,87,009	17,962	62,554	38,391	15,643	1,34,550
1914	67,000	78,745	29,818	1,75,563	32,159	59,603	36,309	12,577	1,40,648
1915	1,77,977	74,964	25,800	2,78,741	41,660	65,522	55,439	5,785	1,68,406
1916	1,66,391	74,770	21,039	2,62,200	44,220	70,485	63,146	6,878	1,84,729
1917	2,50,348	1,01,511	16,321	3,68,180	41,492	79,149	23,535	6,944	1,51,120
1918	2,13,030	1,19,606	18,263	3,50,899	51,643	90,587	63,404	12,414	2,18,048
1919	2,08,491	1,27,650	15,708	3,51,849	55,879	1,15,741	37,426	11,229	2,20,275
1920	95,524	1,57,085	9,900	2,62,509	51,727	1,24,638	35,522	15,080	2,26,967
1921	3,61,736	1,47,999	18,456	5,28,191	65,410	1,44,979	98,434	21,984	3,30,807
1922	70,731*	1,17,499†	39,211	2,27,441	69,096	1,54,429	81,531	21,822	3,26,878

* 7500 frasilas in hand on 31st December, valued at Rs. 1,50,000.

† Sums outstanding Rs. 24,790.

Table XX.

Table showing rents on licensing coconuts from 1910 :—

Year.			Rent.
1910	...	Rs.	21,941
1911	...	,,	41,195
1912	...	,,	52,443
1913	...	,,	68,248
1914	...	,,	93,120
1915	...	,,	75,666
1916	...	,,	71,404
1917	...	,,	93,335
1918	...	,,	1,26,776
1919	...	,,	1,26,169
1920	...	,,	1,49,936
1921	...	,,	1,63,450
1922	...	,,	1,42,289

Note.—Tenders are called for each year for the purchase of the coconuts. As a rule natives only tender who are financed by Indian copra dealers. Rents are paid quarterly in advance, and should the market be falling at quarter day the Indian refuses to advance the purchase money, and the native has no course but to default. Natives, in their anxiety to outbid others, do not carefully estimate the profits possible on the amount they offer, and in 1921 many of them lost over their venture. Hence the lower sum received in 1922.

Table XXI.

Clove yields (Government plantations) showing green and dry cloves and percentage of loss between the two. Season 1922/23 :—

Shamba.	Green cloves.		Dry cloves.		Percentage of loss between the two.	Dry Stems. lbs.
	lbs. picked.	Amount spent.	lbs. delivered.	Amount realized.		
		Rs.		Rs.		
Marseilles ...	451,441	14,978	125,091	...	72	15,321
Basra ...	123,965	4,175	35,469	...	71	4,517
Kinaoni ...	51,265	1,881	16,350	...	68	2,763
Koani ...	168,421	5,761	26,135	...	84	5,225
Dunga ...	153,204	4,972	42,355	...	72	6,933
Kizimbanis ...	227,825	7,849	62,882	...	72	6,474
Mlangos ...	258,265	8,826	75,073	...	71	5,124
Kipange ...	72,974	2,531	22,103	...	69	1,939
Kinuni Moshi ...	40,564	1,350	11,254	...	72	2,160
Bumbvi Sudi ...	34,247	1,125	9,799	...	71	1,646
Selem ...	342,669	12,216	100,734	...	70	22,029
Mahonda ...	66,256	2,390	18,211	...	73	3,813
Mbaleni Kubwa ...	62,842	2,152	12,329	...	80	2,771
Mbaleni Ndogo ...	35,177	1,172	9,423	...	73	1,900
Kitope ...	73,224	2,573	20,405	...	72	3,273
Mkanyageni ...	90,197	3,398	27,646	...	69	5,357
Kidichi ...	43,480	1,441	15,027	...	65	2,990
Mgongowagamia ...	83,323	2,212	22,079	...	73	5,247
Mtoni group ...	14,633	380	3,618	...	75	718
Mazizini group ...	6,305	151	1,823	...	71	532
Fufuni ...	242,529	7,038	78,660	...	68	18,589
Tundaua ...	77,979	2,397	23,615	...	70	5,584
Sundry small plantations in Pemba ...	302,331	9,434	70,965	...	77	3,354
Total ...	3,023,108	100,402	831,046*	...	72	128,259

Note.—1. The table remains incomplete, due to some of the dry cloves remaining unsold.

2. The percentage of loss is largely influenced by the weather. In heavy rains, such as were often experienced in the past season, the drying floors were frequently flooded, and the cloves washed away.

* Equal to 23,744 fraslas of 35 lbs. to one frasla.

Table XXII.

Seasonal clove crops from Government plantations :—

Season.	Zanzibar *fraslas.	Pemba fraslas.	Total fraslas.	Percentage to whole crop of the Protectorate.
1910/11	1,818	337	2,155	1.12
1911/12	16,475	4,986	21,461	2.80
1912/13	1,526	153	1,679	1,24
1913/14	10,394	4,624	15,018	2.06
1914/15	14,911	1,973	16,884	3.21
1915/16	11,300	4,192	15,492	1.94
1916/17	18,782	2,175	20,957	4.09
1917/18	3,805	684	4,489	1.51
1918/19	20,314	4,575	24,889	3.02
1919/20	1,770	280	2,050	0.78
1920/21	18,785	2,451	21,236	4.28
1921/22	783	1,569	2,352	0.88

Crops from previous seasons to 1910 are given in former reports.

*One frasla equals 35 lbs.